

Week ending August 15, 2008



**Lockheed Martin Thermal Protection System (TPS) successfully completed the bonding of the Backshell Manufacturing Demonstration Unit (MDU) AETB-8 Tile** (A composite material having a rigid preformed ceramic fiber matrix, multi-layered material) at the United Space Alliance facility at Kennedy Space Center. Future work will include the installation of TPS gap fillers. Shown is the Thermal Protection Backshell Manufacturing Demonstration Unit (MDU) Tile Bonding (Windward, photo top left, leeward, photo bottom left).

- Cold temperature compression testing of TPS gap filler and compression pad seal candidate materials is complete.
- Preliminary tests using thermally-assisted laser shearography to identify defects in Phenolic Impregnated Carbon Ablator (PICA) material were performed. This technique is used to help determine if compression loads from seals cause damage in PICA.
- Vibration testing and instrumentation of the Avcoat acoustic specimen were completed. Avcoat has superior heat shielding properties and was used in the heat shielding on the Apollo Crew Module.



**The 75-AA Subsonic/Supersonic Active Control Motor (ACM) Jet Interaction Test was completed at the Ames Unitary Plan Wind Tunnel.** The test successfully documented the aerodynamic interactions of the ACM plumes with the Alternate Launch Abort System (ALAS) Launch Abort Vehicle (LAV) for mach numbers from 0.3 to 2.5. The test spanned approximately 5 weeks in the two test sections and covered a wide variety of test conditions and ACM thrust levels and firing angles. Data analysis is under way.



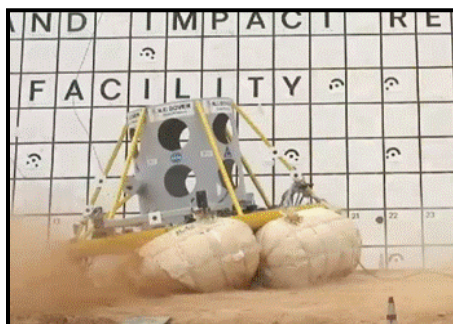
**Lockheed Martin successfully completed the Pad Abort-1 (PA-1) Launch Abort System Retention and Release Mechanism Separation Test.** The

purpose of the test was to measure friction during separation of shear bushing under shear load. The test results were as predicted and met PA-1 performance objectives (Photo right).



**The Landing Recovery System Project at LaRC completed the first test in the extended matrix of second generation circumferential airbag system tests.**

The full scale ILC test article was tested with an impact condition of 25fps vertical, 40 fps horizontal and 10 degree toe in pitch angle. Initial assessment of the soil indicated the moisture content was closer to the high moisture of the first 40fps test. The test article had a 55-60 degree pitch over at the end of the slide out. After lingering in the pitched over orientation for a half second, the test article settled back to its normal zero pitch position (Photos below).





## Pad Abort-1 Progress

### Launch Abort System (LAS) Motor Progress

- The Abort Motor ST-1 nozzle cork rework was completed and nozzles shipped on August 8.
- The LAS-1 nozzles are complete through subassembly and are awaiting cork installation. The LAS-1 nozzle ship date is September 11.
- The Jettison Motor SDU motor case is insulated and ready for cast on September 11, 2008. The nozzles and aft closure were completed.
- The welding on ports #3 and #4 on the Abort Motor titanium manifold (to be used for production) are complete
- The Jettison Motor LAS-1 (PA-1 motor) nozzles and aft closure are installed to the loaded motor case.
- Wall and ceiling acoustic blanket clickbonds installation is complete.
- The strain gauge installation on the LAS Retention and Release brackets is complete, and the Crew Module microphone sensors and protective covers were installed.

### Flight Test & Analysis Design, Analysis, Fabrication and Assembly

All 12 "Pathfinder" Pad Abort Crew Module skin panels are installed. Forward Bay Cover (FBC) fit checks and shimming and thruster brackets match drill operations are complete.



*Pathfinder Pad Abort-1 Crew Module Structure*

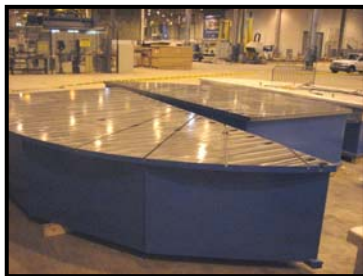


*Pathfinder Pad Abort-1 Forward Bay Cover painted and fit checked*

**White Sands Missile Range (WSMR) launch facilities** construction of the launch pad continues working towards an estimated construction complete date with a walk-through inspection of August 22. The original schedule margin is holding, with the launch pad on plan to being finished 5 weeks before the need date of October 1, 2008.



## Manufacturing and Test Facilities Progress



### Michoud Assembly Facility (MAF)

**Universal Weld System #2** tool foundation concrete is poured to grade.

**Universal Weld System #2** shipments of major components continue to arrive. Photo left shows portions of the turntable assembly.



### Education and Outreach

Holley Dickmeyer returned to Purdue after spending ten weeks as one of Marshall Space Flight Center's 120 summer interns. She spent her time collecting information on the materials used in the Jettison Motor (JM), analyzing the behavior of the nozzle housing, and attending various JM discussions. Holley was also the winner of the 2008 University Intern Poster Expo, where interns had the opportunity to demonstrate the results of their summer work (Photo right).

